the labeling moiety comprises a label and a spacer, wherein the spacer is coupled at one end to the Pt atom and at the other end to the label, the spacer comprising a chain having at least four atoms.

24. The labeled nucleotide according to claim 23, wherein the aliphatic diamine has 2-6 carbon atoms.

25. The labeled nucleotide according to claim 23, wherein the aliphatic diamine has the formula $G_2NCH_2\ CH_2\ NG_2$, wherein G represents H or an alkyl group of from 1 to 6 carbon atoms.

A1

26. The labeled nucleotide according to claim 23, wherein X represents ethylenediamine.

27. The labeled nucleotide according to claim 23, wherein X represents N,N,N',N'-tetramethylethylenediamine.

28. The labeled nucleotide according to claim 23, wherein the spacer comprises no more twenty carbon atoms.

29. The labeled nucleotide according to claim 28, wherein the carbon atoms are non-branched.

30. The labeled nucleotide according to claim 23, wherein the spacer comprises at least four carbon atoms and at least one heteroatom.

31. The labeled nucleotide according to claim 30, wherein the heteroatom is oxygen.

32. The labeled nucleotide according to claim 31, wherein the spacer is 1,8-diamino-3,6-

dioxaoctane.

33. The labeled nucleotide according to claim 23, wherein the spacer is an oligolysine or a polylysine.

34. The labeled nucleotide according to claim 23, wherein the label is radioactive.

35. The labeled nucleotide according to claim 23, wherein the label is an enzyme.

A1

36. The labeled nucleotide according to claim 23, wherein the label is a component of a specific binding pair.

37. The labeled nucleotide according to claim 36, wherein the specific binding pair is biotin and either avidin or streptavidin.

38. The labeled nucleotide according to claim 23, wherein the label is a dye, a fluorochrome, or a reducing agent.

39. The labeled nucleotide according to claim 23, wherein the label is digoxygenin.

40. The labeled nucleotide according to claim 23, wherein the nucleotide is adenine, thymidine, cytosine, guanine, or uridine.

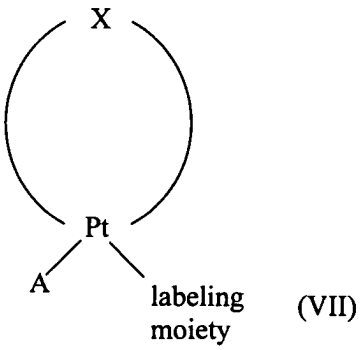
41. The labeled nucleotide according to claim 23, wherein the nucleotide is adenine, thymidine, cytosine, and either guanine or uridine.

42. The labeled nucleotide according to claim 23, wherein the nucleotide is a purine.

43. A method for labeling a nucleotide comprising:

providing a nucleotide;

providing a labeling substance having formula VII,




(VII)

wherein:

X represents an aliphatic diamine;

A represents a reactive moiety capable of reacting with the nucleotide, thereby attaching the nucleotide to the labeling substance when the reactive moiety reacts with the nucleotide;

the labeling moiety comprises a spacer comprising an electron donating moiety bonded to the platinum atom, a chain having at least four atoms attached to the electron donating moiety, and a label attached to the end of the chain distal to the electron donating moiety; and,

reacting the reactive moiety with the nucleotide, thereby labeling the nucleotide.

44. The method according to claim 43, wherein X represents an aliphatic diamine having 2-6 carbon atoms.

45. The method according to claim 43, wherein X represents an aliphatic diamine having the formula $G_2NCH_2\ CH_2\ NG_2$, wherein G represents H or an alkyl group of from 1 to 6 carbon atoms.

A1

46. The method according to claim 43, wherein X represents ethylenediamine.

47. The method according to claim 43, wherein X represents N,N,N',N'-tetramethylethylenediamine.

48. The method according to claim 43, wherein A represents $NO_3^-$, $SO_3^-$, $Cl^-$, $I^-$, other halogen or $Me_2SO$.

49. The method according to claim 43, wherein A represents $NO_3^-$.

50. The method according to claim 43, wherein the spacer comprises no more twenty carbon atoms.

51. The method according to claim 50, wherein the carbon atoms are non-branched.

52. The method according to claim 43, wherein the spacer comprises at least four carbon atoms and at least one heteroatom.

53. The method according to claim 52, wherein the heteroatom is oxygen.

54. The method according to claim 53, wherein the spacer is 1,8-diamino-3,6-

dioxaoctane.

55. The method according to claim 43, wherein the spacer is an oligolysine or a polylysine.

56. The method according to claim 43, wherein the electron donating moiety is an amino group or a thiolate group.

A1

57. The method according to claim 56, wherein the amino group is an aromatic amino group.

58. The method according to claim 56, wherein the amino group is an imidazole or purine group.

59. The method according to claim 43, wherein the label is radioactive.

60. The method according to claim 43, wherein the label is an enzyme.

61. The method according to claim 43, wherein the label is a component of a specific binding pair.

62. The method according to claim 61, wherein the specific binding pair is biotin and either avidin or streptavidin.

63. The method according to claim 43, wherein the label is a dye, a fluorochrome, or a reducing agent.

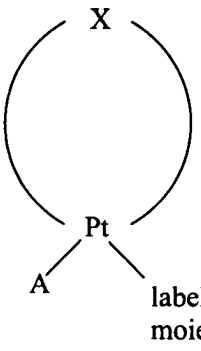
64. The method according to claim 43, wherein the label is digoxygenin.

65. The method according to claim 43, wherein the nucleotide is adenine, thymidine, cytosine, guanine, or uridine.

66. The method according to claim 43, wherein the nucleotide is adenine, thymidine, cytosine, and either guanine or uridine, or guanine and uridine.

67. The method according to claim 43, wherein the nucleotide is a purine.

68. A labeling substance having formula VII:




(VII)

wherein:

X represents an aliphatic diamine;

A represents a reactive moiety; and

the labeling moiety comprises a label and a spacer, wherein the spacer is coupled at one end to the Pt atom and at the other end to the label, the spacer comprising a chain having

at least four atoms.

69. The labeling substance according to claim 68, wherein X represents an aliphatic diamine having 2-6 carbon atoms.

70. The labeling substance according to claim 68, wherein X represents an aliphatic diamine having the formula $G_2NCH_2\ CH_2\ NG_2$, wherein G represents H or an alkyl group of from 1 to 6 carbon atoms.

71. The labeling substance according to claim 68, wherein X represents ethylenediamine.

72. The labeling substance according to claim 68, wherein X represents N,N,N',N'-tetramethylethylenediamine.

73. The labeling substance according to claim 68, wherein A represents $NO_3^-$, $SO_3^-$, $Cl^-$, $I^-$, other halogen or $Me_2SO$.

74. The labeling substance according to claim 68, wherein the spacer comprises no more twenty carbon atoms.

75. The labeling substance according to claim 74, wherein the carbon atoms are non-branched.

76. The labeling substance according to claim 68, wherein the spacer comprises at least four carbon atoms and at least one heteroatom.

77. The labeling substance according to claim 76, wherein the heteroatom is oxygen.

78. The labeling substance according to claim 77, wherein the spacer is 1,8-diamino-3,6-dioxaoctane.

79. The labeling substance according to claim 68, wherein the spacer is an oligolysine or a polylysine.

80. The labeling substance according to claim 68, wherein the electron donating moiety is an amino group or a thiolate group.

81. The labeling substance according to claim 80, wherein the amino group is an aromatic amino group.

82. The labeling substance according to claim 80, wherein the amino group is an imidazole or purine group.

83. The labeling substance according to claim 68, wherein the spacer reactive moiety is $NH_2$.

84. The labeling substance according to claim 68, wherein the label is radioactive.

85. The labeling substance according to claim 68, wherein the label is an enzyme.

86. The labeling substance according to claim 68, wherein the label is a component of a specific binding pair.

87. The labeling substance according to claim 86, wherein the specific binding pair is biotin and either avidin or streptavidin.

88. The labeling substance according to claim 68, wherein the label is a dye, a fluorochrome, or a reducing agent.

89. The labeling substance according to claim 68, wherein the label is digoxygenin.

90. The labeling substance according to claim 68, wherein the nucleotide is adenine, thymidine, cytosine, guanine, or uridine.

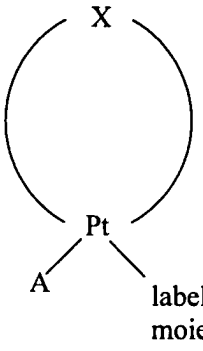
91. The labeling substance according to claim 68, wherein the nucleotide is adenine, thymidine, cytosine, and either guanine or uridine.

92. The labeling substance according to claim 68, wherein the nucleotide is a purine.

93. A kit for labeling a nucleotide comprising:

a nucleotide; and

a labeling substance having formula VII,




(VII)

wherein:

X represents an aliphatic diamine;

A represents a reactive moiety capable of reacting with the nucleotide, thereby attaching the nucleotide to the labeling substance when the reactive moiety reacts with the nucleotide;

the labeling moiety comprises a spacer comprising an electron donating moiety bonded to the platinum atom, a chain having at least four atoms attached to the electron donating moiety, and a label attached to the end of the chain distal to the electron donating moiety.

94. The kit according to claim 93, wherein X represents an aliphatic diamine having 2-6 carbon atoms.

95. The kit according to claim 93, wherein X represents an aliphatic diamine having the formula $G_2NCH_2\ CH_2\ NG_2$, wherein G represents H or an alkyl group of from 1 to 6 carbon atoms.

96. The kit according to claim 93, wherein X represents ethylenediamine.

97. The kit according to claim 93, wherein X represents N,N,N',N'-tetramethylethylenediamine.

98. The kit according to claim 93, wherein A represents $NO_3^-$, $SO_3^-$, $Cl^-$, $I^-$, other halogen or $Me_2SO$.

99. The kit according to claim 93, wherein A represents $NO_3^-$.

100. The kit according to claim 93, wherein the spacer comprises no more than twenty carbon atoms.

101. The kit according to claim 100, wherein the carbon atoms are non-branched.

102. The kit according to claim 93, wherein the spacer comprises at least four carbon atoms and at least one heteroatom.

103. The kit according to claim 102, wherein the heteroatom is oxygen.

104. The kit according to claim 102, wherein the spacer is 1,8-diamino-3,6-dioxaoctane.

105. The kit according to claim 93, wherein the spacer is an oligolysine or a polylysine.

106. The kit according to claim 93, wherein the electron donating moiety is an amino group or a thiolate group.

107. The kit according to claim 106, wherein the amino group is an aromatic amino group.

108. The kit according to claim 106, wherein the amino group is an imidazole or purine group.

109. The kit according to claim 93, wherein the label is radioactive.

110. The kit according to claim 93, wherein the label is an enzyme.

111. The kit according to claim 93, wherein the label is a component of a specific binding pair.

112. The kit according to claim 111, wherein the specific binding pair is biotin and either avidin or streptavidin.

113. The kit according to claim 93, wherein the label is a dye, a fluorochrome, or a reducing agent.

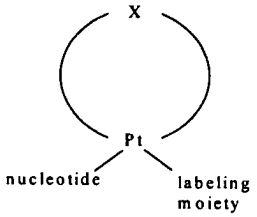
114. The kit according to claim 93, wherein the label is digoxygenin.

115. The kit according to claim 93, wherein the nucleotide is adenine, thymidine, cytosine, guanine, or uridine.

116. The kit according to claim 93, wherein the nucleotide is a mixture of adenine, thymidine, cytosine, and either guanine or uridine, or guanine and uridine.

117. The kit according to claim 93, wherein the nucleotide is a purine.

118. A kit for producing a labeled nucleic acid comprising:
a labeled nucleotide having formula:



wherein X represents an aliphatic diamine; and

the labeling moiety comprises a label and a spacer, wherein the spacer is coupled at one end to the Pt atom and at the other end to the label, the spacer comprising a chain having at least four atoms; and

unlabeled nucleotides.

119. The kit according to claim 118, wherein X represents an aliphatic diamine having 2-6 carbon atoms.

120. The kit according to claim 118, wherein X represents an aliphatic diamine having the formula $G_2NCH_2CH_2NG_2$, wherein G represents H or an alkyl group of from 1 to 6 carbon atoms.

121. The kit according to claim 118, wherein X represents ethylenediamine.

122. The kit according to claim 118, wherein X represents N,N,N',N'-tetramethylethylenediamine.

123. The kit according to claim 118, wherein the spacer comprises no more than twenty carbon atoms.

124. The kit according to claim 123, wherein the carbon atoms are non-branched.

125. The kit according to claim 118, wherein the spacer comprises at least four carbon atoms and at least one heteroatom.

126. The kit according to claim 125, wherein the heteroatom is oxygen.

127. The kit according to claim 125, wherein the spacer is 1,8-diamino-3,6-dioxaoctane.

128. The kit according to claim 118, wherein the spacer is an oligolysine or a polylysine.

129. The kit according to claim 118, wherein the label is radioactive.

130. The kit according to claim 118, wherein the label is an enzyme.

131. The kit according to claim 118, wherein the label is a component of a specific binding pair.

132. The kit according to claim 131, wherein the specific binding pair is biotin and either avidin or streptavidin.

133. The kit according to claim 118, wherein the label is a dye, a fluorochrome, or a reducing agent.

134. The kit according to claim 118, wherein the label is digoxygenin.

135. The kit according to claim 118, wherein the labeled nucleotide is labeled adenine, thymidine, cytosine, guanine, uridine, or combinations thereof.

136. The kit according to claim 118, wherein the unlabeled nucleotide is adenine, thymidine, cytosine, guanine, uridine, or combinations thereof.

137. The kit according to claim 118, wherein the labeled nucleotide is a purine.